

THE CHILOPODA OF CALIFORNIA II

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FAMILY LITHOBIIDAE (continued)

Genus *Pseudolithobius* Stuxberg

Only the type species of this genus is known.

Pseudolithobius megaloporus Stuxberg

Antennae very short, consisting of nineteen to twenty articles, of which the ultimate is very long. Ocelli seven in two series (1-3, 3). Prosternal teeth 2-2 or 3-3. Angles of the ninth, eleventh and thirteenth dorsal plates produced. Coxal pores 2, 2, 1, 1, 1, very large, circular. Anal legs very short, crassate, spines 0, 1, 1, 0, the claw unarmed.

Length of body 12 mm.; of antennae 4 mm.; of anal legs 2.5 mm.

Known only from the type collected near San Francisco by Eisen.

Thus far I have not identified this species in an abundance of material from California. Judging from the description of antennae, spining of legs, coxal pores, etc., it would seem practically certain that this species was based upon an immature specimen.

Order Epimorpha

The members of this order fall in two main groups or suborders which may be separated as follows:

Key to suborders of the Epimorpha

- A. With twenty-one or twenty-three pairs of legs; pairs of spiracles nine, ten, eleven, or nineteen. *Scolopendroidea*.
- AA. Pairs of legs thirty-one or more; pairs of spiracles two less than the number of pairs of legs, being absent from the first and the last body segment. *Geophiloidea*.

Suborder Scolopendroidea

The members of the Scolopendroidea live for the most part in the warmer regions of the earth, the large tropical and sub-tropical centipedes belonging here.

The members of the group are essentially nocturnal, during the daytime lying concealed in holes in the ground, under stones, bark, logs, fallen leaves, etc., and at night wandering about and often entering dwelling houses. They live chiefly upon insects, spiders, worms, and smaller chilopods.

The body is elongated and varies from slender to robust. The antennae are short and are composed of from seventeen to thirty-three articles, the number varying mostly toward the lesser limit. Eyes either absent or composed of four simple ocelli on each side. Prehensorial feet with coxae completely fused in a prosternum which mesally extends cephalad in two processes which may or may not bear teeth. The basal plate, or dorsal scutum of segment to which prehensorial feet belong, either absent or rudimentary. Pairs of legs constant (either

twenty-one or twenty-three) both for genera and for species. Coxa of anal legs absent or fused with the pleuræ, forming thus the so-called pseudopleura or coxapleura, and the trochanter absent or rudimentary. The pseudopleuræ are strongly developed and are more or less produced caudad at mesal side into the so-called pseudopleural processes, the processes often bearing a number of spines which may also exist on the caudal margin ectad of the process; always densely porose over surface. Tarsi of anal legs from two to many segmented, those of the other legs undivided or biarticulate.

The three families of this sub-order may be separated by means of the following key. Of these three families two are known to be represented in California:

Key to Families of the Scolopendroidea

- A. Without eyes; tarsi of all legs excepting the anal and penult pairs unsegmented; tibia at distal end with one or two spines or with bristles arranged in longitudinal rows beneath. Family *Cryptopidae*.
- AA. Eyes present, composed of four ocelli on each side; tarsi of anterior legs all biarticulate; tibia without spines at distal end or rows of bristles beneath.
- B. Spiracles oval or circular, oblique to long axis of body; tarsal spines generally present and two in number on the anterior legs; cephalic plate never overlapping the first dorsal plate; basal plate and longitudinal furrows never present. Family *Olostigmidae*.
- BB. Spiracles angular, triangular or narrowly slit-like, parallel to long axis of body; tarsal spines absent or only one in number; cephalic plate often overlapping the first dorsal plate or in other cases basal plate and longitudinal furrows present. Family *Scolopendridae*.

Family *Cryptopidae*

The genera of this family occurring within the United States may be separated by means of the following key:

Key to genera of the *Cryptopidae*

- A. Twenty-one leg-bearing segments; pairs of spiracles nine or nineteen.
- B. Last dorsal plate not longer than the penult, mostly shorter than wide, its caudal margin convexly excurved or bluntly angular.
- C. Pseudopleura not produced caudad into a slender process. Genus *Cryptops* Leach.
- CC. Pseudopleura produced caudad into a slender process. Genus *Anethops* Chamberlin.
- BB. Last dorsal plate nearly twice as long as the penult, longer than wide, the caudal margin nearly straight.
- C. Nine pairs of spiracles. Genus *Theatops* Newport.
- AA. Twenty-three leg-bearing segments; pairs of spiracles ten or eleven.
- B. Anal legs with a claw and a two-jointed tarsus; prefemur of anal legs with but two spines; femur of prehensorial feet with a basal tooth.
- C. Seventh segment without spiracles (ten pairs of spiracles present). Genus *Otocryptops* Haas.

CC. Seventh segment with spiracles (eleven pairs of spiracles present).

Genus *Scolopocryptops* Newport.

BB. Anal legs without a claw and the tarsi transformed into a many jointed, antenna-like lash; prefemur of anal legs with rows of from three to six spines on ventral surface; femur of prehensorial feet without basal tooth.

Genus *Newportia* Gervais.

Genus *Theatops* Newport

Of this genus, one species (*T. erythrocephalus*) occurs in southern Europe and three in North America, of which the one found in California is very close to the European form and is accordingly listed below as a subspecies to it.

The members of this genus are of medium size (35-46 mm.), have twenty-one pairs of legs, and but nine pairs of circular or subcircular spiracles, not being present on the seventh segment. The antennæ consist uniformly of seventeen articles. The anal legs are short and thick, with the claw strongly enlarged.

Theatops erythrocephalus subspecies *californiensis* Chamberlin

This is the only form of *Theatops* thus far known to occur on the Pacific coast.

From 40 to 46 mm. in length. Brown in color, with antennae and legs yellowish. Teeth of prosternum 3-3, large. Tooth on femur of prehensorial feet rather large and stout. Tibiæ, except of last two pairs, armed with a spine both above and beneath. Anal legs stout, short, the claw about as long as the two tarsal joints together. Prefemur and femur both armed beneath toward mesal side with a single moderate tooth. Pseudopleura with process ending in a stout spine or tooth.

The only record from the state is Quincy, Cal., the type locality. Probably the same form as that reported by Kraepelin from Oregon.

Genus *Otocryptops* Haase

This genus, of which some five species are now known, is represented in the fauna of both hemispheres. Two species occur in California.

The members of this genus when fully grown reach a length of mostly from 50 to 60 mm. They have twenty-three pairs of legs and ten pairs of oval spiracles. As in the preceding genus, the antennæ are composed constantly of seventeen articles. Anal legs not shortened, and the claw of moderate size.

The California species may be identified by means of the following key, in which a new species from Idaho is also taken up:

Key to Species of *Otocryptops*

A. Ventral plates nearly all with a distinct median furrow; dorsal scuta mostly with a median furrow.

B. Inner spine of prefemur rudimentary to entirely aborted; lateral angles of the last dorsal plate ending in a small spinous point; last ventral plate with caudal margin truncate or but weakly incurved.

O. gracilis Wood.

- BB. Inner spine of prefemur well developed; lateral angles of the last dorsal plate not at all spinous pointed; last ventral plate with caudal margin conspicuously concave. *O. mundus* sp. nov.
- AA. Ventral plates smooth, without a median furrow; dorsal scuta without a median furrow; cephalic plate margined laterally as well as at caudal angles. *O. sexspinosus* Say.

Otocryptops gracilis Wood

Yellowish brown to ferruginous or yellowish red in color. All articles of the antennae hirsute or the dorsal surface of the first alone smooth. Prosternum mostly with two small teeth. The median furrow of ventral plates deep and widened at middle of length. Processes of pseudopleurae short. Prefemur with ventral spine well developed, the inner one obsolete or absent.

Fort Tejon (type locality, Wood); Los Angeles (author); Claremont (common, Pomona College Coll.); Stanford (Mann).

Known only from California, where it is commonest in the southern portion of the state. It has not been recorded from north of Stanford. The species is closest to the following one:

Otocryptops mundus sp. nov.

(Figure 156, A, B, E, F)

Head mostly smooth, finely punctate, especially over caudal and caudo-lateral portions. Margined caudo-lateral and also to some extent laterally. All articles of antennae pubescent or the first article smooth dorsally as in *gracilis*. Dorsal plates 5-22 strongly margined laterally, the fourth more weakly so, the twenty-third weakly so. Median furrows on dorsal plates much as in *gracilis*. Last dorsal plate but slightly narrowed caudad, caudal border less extended than in *gracilis*, the lateral angles rounded and wholly without indications of spinous point. Prosternum without teeth. Ventral plates from one to twenty-one with a longitudinal median furrow. Last ventral plate rather deeply excavated caudally. Pseudopleurae with conspicuous, pointed caudal processes, decidedly longer than in preceding species. Anal legs very long and stout; both ventral and inner spine of prefemur stout and conspicuous. Brown; head and last segments reddish; legs and antennae yellowish or yellowish brown, anal legs darker. Length ad 60 mm.

Kendrick, Idaho (Mann), is the only known locality thus far.

The species is very close to the preceding and might even be with reason regarded as a subspecies to it.

Otocryptops sexspinosus Say

Brownish to deep rust red. Antennae usually with the first two articles glabrous and shining, the others densely hirsute. The prosternal margin nearly straight and smooth, without any indications of teeth. Prefemur of anal legs with both ventral and inner spine conspicuous. Pseudopleural processes large. Ventral plates smooth, without median furrow. No median dorsal furrow or line.

One of the commonest of all chilopods throughout most of the state but becom-

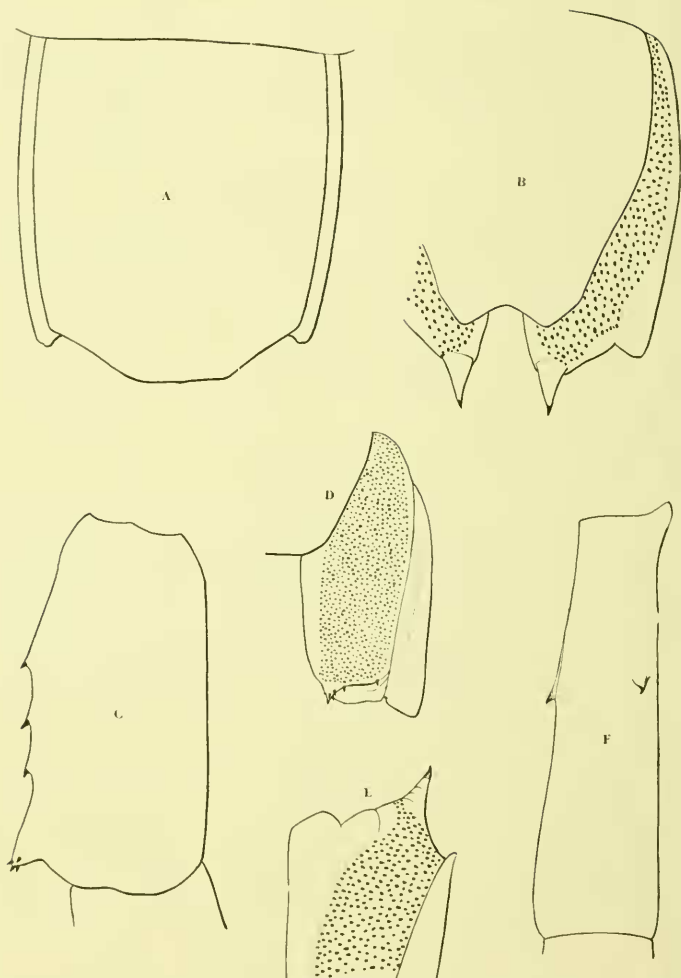


Figure 156

A, last dorsal plate of *Otocryptops mundus*; B, ultimate ventral segment of *O. mundus*, ventral aspect, showing last ventral plate and left pseudopleura, with pores, caudal process, etc.; C, prefemur of right anal leg of *Scolopendra polymorpha*, dorsal aspect, showing apical process with its spines and some of the inner spines, etc.; D, left pseudopleura of *S. polymorpha*, ventral aspect, showing pores, caudal process with its spines, etc.; E, pseudopleura of *O. mundus*, lateral aspect, showing caudal process, etc.; F, prefemur of left anal leg, ventral aspect, of *O. mundus*, showing ventral and inner spine.

ing rare southward, where it seems to be replaced by *gracilis*. Shasta Springs, San Francisco, Pacific Grove, Stanford, etc. (author).

Genus *Scolopocryptops* Newport

This genus, represented by only three or four known species, is represented in the faunæ of China and of North and South America.

The genus is very close to *Otocryptops* in nearly all important structural characters, but differs in having eleven pairs of spiracles instead of the ten of the latter genus, the thirteenth body segment bearing the extra pair.

One species is at present known from North America.

Scolopocryptops miersii Newport

Extremely variable in color. Most adults dark brownish black; legs yellow, the last pairs and the antennæ proximally mingled bluish green and yellow. The three proximal articles of the antennæ smooth and shining. Prosternum with angle at each side more or less produced into a tooth-like process. Femur of prehensorial feet bearing on mesal surface a rather large and stout basal tooth which at its base is one-sixth as wide as the femur. Ventral plates without median furrow. Legs nearly glabrous. Legs back as far as the nineteenth pair with two tibial and one tarsal spine, most claws unarmed at base. Prefemur of anal legs with a stout spine beneath and a smaller one within. Length up to 100 mm. or more.

Doubtfully recorded from California. However, it is widespread in the southeastern states and through Mexico, southward to Brazil, and it is naturally to be expected within this state.

Genus *Anethops* Chamberlin

The species listed below is the only representative of this genus known:

Pairs of legs twenty-one. Spiracles ten pairs. Sterna with a median furrow in some, crossed by a transverse impression. Antennæ composed of seventeen articles, thickened proximally. Processes of pseudopleuræ ending in a single spine. Tarsi of all legs excepting the last ones unsegmented. Claw of anal legs not of unusual size, armed at base with spines.

Anethops occidentalis Chamberlin

Ferruginous, feet pale. Most ventral plates with a cruciform impression, the longitudinal furrow deepest. Prosternum without dental plate. Tooth on femur of prehensorial feet small, acute. Length ad 35 mm.

Known only from type specimen taken in San Gabriel canyon, Los Angeles county.

Genus *Cryptops* Leach

A cosmopolitan genus represented by more than two dozen known species, some of which range farther north than any others of the *Scolopendroidea*.

Pairs of legs twenty-one. Pairs of spiracles nine. Antennæ normally with seventeen articles, the number sometimes less. Dorsal scuta with two longitudinal furrows and often also a median keel. Sterna with distinct cruciform impressions. Prosternum without anterior extensions and with no dental plates.

Prehensorial feet without a tooth on mesal face of femur, claws large. Pseudopleuræ without caudal processes, merely rounded caudally. Legs without tibial spines. Tibia and first tarsal joint of anal legs with a comb-like row of spines or teeth on ventral surface.

Cryptops hyalinus Say

Fulvous, the legs and antennæ paler. Very slender. Prosternal margin with six to eight fine, short hairs. Eighteenth sterna with cross furrow only, the nineteenth to twenty-first mostly unfurrowed. Inner margin of pseudopleura rounded, porigerous area with about seventeen large pores, the smooth caudal border clothed only with scattered hairs. Spiracles small, circular. Prefemur of anal legs ventrally with numerous spiniform bristles, without apical spiniform process; femur similarly clothed, without apical tooth or process. Tibia ventrally with seven to eight comb-teeth; the first joint of tarsus with four, neither with lateral spines. Length 15-20 mm.

Doubtfully recorded from California (Kraepelin). A vial, possibly, but not certainly, from southern California (Catalina Island), and in the author's collection, contains several specimens of this species. The species is widespread in the eastern and southeastern United States.

Genus *Newportia* Gervais

Between fifteen and twenty species of this genus are known, all from America and all but one (*N. utahensis* Chamb.) from tropical or sub-tropical localities.

In the members of this genus there are twenty-three pairs of legs and eleven pairs of spiracles. First dorsal plate with a transverse cervical furrow. Ventral plates with longitudinal furrows but with no cross impressions. Prosternum with or without dental laminae. Femur of prehensorial feet without basal tooth. Pseudopleuræ with long, pointed caudal processes. Tarsi of anal legs composed of numerous segments, lash-like.

While no species of this genus has as yet been found within California, it seems quite likely that the genus will be found to be represented in the southern portion of the state. The species of the genus are obscure in habit and most of them are known from one or from but few specimens. Hence, a species occurring in a locality may long escape discovery.

Family *Scolopendridae*

The genera of this family known to occur within the United States may be separated by means of the following key:

Key to genera of the *Scolopendridae*

- A. All legs lacking tarsal spines.
- B. Process of pseudopleura three to many toothed or spined, slender, sub-cylindric; no trace of basal plate. Genus *Hemiscolopendra* Kraepelin.
- AA. All legs, excepting the anal, with tarsal spines (cephalic plate with caudal margin free).
- B. Claw of anal legs and without basal spines; cephalic plate but slightly overlapping the first dorsal. Genus *Arthrorhabdinus* Verhoeff.

- BB. Claw of anal legs with distinct basal spines; cephalic plate distinctly and considerably overlapping the first dorsal plate.

Genus *Scolopendra* Linnaeus.

Genus *Hemiscolopendra* Kraepelin

This genus is peculiar to the western hemisphere. Its species have for the most part been considered under *Scolopendra*, which they conform to in general habit and structure. One species (*H. punctiventris* Newport) is widespread in the eastern United States, but none is known from California.

Genus *Arthrorhabdinus* Verhoeff

Established as a subgenus to *Arthrorhabdus*, a South African genus, for the Texan species *A. pygmaeus* Pocock, a species which may possibly range across Arizona into southern California and which is accordingly included here.

Genus *Scolopendra* Linnaeus

This, the typical centipede genus, embraces about two dozen valid species and presents an excessive range under these of minor geographical forms, of which a very large number have by different authors been dignified as species. The variability in size, color, and many other characters is extreme. It is cosmopolitan in the warmer zones of the earth.

No basal plate present. Antennae composed of seventeen to thirty-one articles, of which the proximal four or more are glabrous. Prosternum with dental plate; femur of prehensorial feet with basal tooth. Pseudopleura with toothed or spined caudal process. A tarsal spine on each leg excepting last pair. Prefemur of anal legs spined, always with spines at apical process or angle.

The species occurring within California may be distinguished as follows:

Key to Species of *Scolopendra*

- A. First dorsal plate with a deep transverse impression back of anterior margin.
 - B. Cephalic plate impressed with two fine longitudinal furrows which diverge cephalad; length 100 to 200 mm. *S. heros* Girard.
 - BB. Cephalic plate wholly without furrows or at most with a weak median furrow; first legs with two tarsal spines; length mostly from 50 to 100 mm.
 - C. Apical process of prefemur of anal legs mostly with four spines; cephalic plate always without any furrows. *S. polymorpha* Wood.
- AA. First dorsal plate without a deep transverse impression back of cephalic margin (legs of first pair with but one tarsal spine).
 - B. Prefemur of anal legs with none to five spines only.
 - C. Prefemur of anal legs without spines beneath and at most with two on the inner or mesal surface. *S. dchaani* Brandt.
 - CC. Prefemur of anal legs with four or five spines, of which two are always ventral in position. *S. subspinipes* Leach.
 - BB. Prefemur of anal legs with ten to fifteen spines, of which six to nine are ventral in position and arranged in three series.
 - C. Apical process of prefemur bearing three or four spines. *S. morsitans* Linnaeus.

Scolopendra heros Girard

Very large, attaining a maximum length of above 200 mm. Dark green to olive or chestnut brown; the head often showing both colors in parts or entirely chestnut. Prosternal teeth 4-4 to 5-5, the three inner ones more or less united or fused at base; caudal limiting furrows of dental plates forming nearly a straight line. Legs one to twenty with a tarsal spine, prefemora and femora unarmed at distal end above. Pseudopleural process bearing six to eleven spines, and one or two on caudal margin of process. Prefemur of anal legs mostly with eleven spines on ventral surface, these irregularly scattered or else arranged in four series; five spines on inner surface and above; apical process bearing seven to eleven spines.

Found from the southeastern states through Kansas, Indian Territory and Texas to Arizona and Mexico. Probably will be found in southern California.

Scolopendra polymorpha Wood

(Figure 156, C, D)

Attaining a maximum length of about 140 mm. In color from clear or dark olive yellow to olive brown, the caudal borders of dorsal plate mostly dark green; legs yellow. Prosternal teeth four to four. First legs with two tarsal spines, legs two to twenty with but one. Prefemora and femora of these legs unarmed at distal end above. Pseudopleural process tipped with four to seven spines or points; one spine on caudal margin. Prefemur of anal legs with eight to ten ventral spines in two rows, and mesally with nine to thirteen; apical process ending mostly in four (rarely in three or five) spines.

Known from Kansas, Indian Territory, Texas, Arizona and California, in the latter state being clearly the most common species. Specimens have been examined from Stanford, Los Angeles (author and W. M. Mann), and Claremont (Baker, A. Pruett, F. M. Eakin, Helen Humphrey, A. Sugg, P. Daggs, Helen Davis, K. Garner, A. M. Wire).

Scolopendra dehaani Brandt

Occasionally reaching a length of as much as 200 mm. Very variable in color; from olive to green and brown, the caudal margin of dorsal plates commonly dark green; head and first dorsal plate often differently colored from rest of body. Prosternal teeth five to five (rarely four to four) to nine to nine. Prefemur of anal legs without spines beneath, with one to three within; apical process one or two pointed. Pseudopleural process with two spines or points.

In the United States known only from California, where it has likely escaped from vessels. It is common in India, China, and the East Indies.

Scolopendra subspinipes Leach

Very similar to the preceding species in size and coloration, the former possibly to be regarded as but a subspecies or variety.

It differs from *S. dehaani* chiefly in having the prefemur of the anal legs armed beneath with from one to three spines.

Cosmopolitan in tropical and warmer regions of the earth. In the United States known only from Florida and California.

Scolopendra morsitans Linnaeus

Mostly attaining a length not above 90 mm.; rarely 100 or 120 mm. Lemon yellow to reddish yellow, with or without green caudal borders to the dorsal plates; more rarely olive green to dark green with the head and last segment then mostly yellowish brown. Prosternal teeth four to four, four to five. Legs one to twenty with tarsal spine, leg twenty-one mostly without such. Pseudopleural process ending mostly in four points or spines, commonly a single spine on caudal margin ectad of process. Prefemur of anal legs ventrally with three rows of three spines each, mesally without spines, but dorsally with four to six spines in two rows; apical process bearing four spines (rarely five to eight).

Cosmopolitan in warm and temperate regions. In the United States known from Georgia, Florida, Kansas, Utah, and California.